

CLAIMS

We claim:

1. A variable tuned transmission line stub, comprising:
a transmission line stub having an input at one end, an electrical length and a termination at an opposing end;
a fluid dielectric; and;
a fluid control system for selectively moving said fluid dielectric from a first position where said fluid dielectric is electrically and magnetically coupled to said transmission line stub to produce a first tuned circuit response, to a second position where said fluid dielectric is electrically and magnetically decoupled from said transmission line stub to produce a second tuned circuit response distinct from said first tuned circuit response.
2. The variable tuned transmission line stub according to claim 1 wherein said termination is selected from the group consisting of a short circuit and an open circuit.
3. The variable tuned transmission line stub according to claim 1 wherein said termination is capacitive.
4. The variable tuned transmission line stub according to claim 1 wherein at least one electrical characteristic of said transmission line stub is changed when said fluid dielectric is moved from said first position to said second position.
5. The variable tuned transmission line stub according to claim 4 wherein said electrical characteristic is a selected from the group consisting of an electrical length, a signal propagation velocity, an input impedance, and a characteristic impedance of said transmission line stub.

6. The variable tuned transmission line stub according to claim 1 wherein said fluid control system includes a pump for moving said fluid dielectric between said first position and said second position.
7. The variable tuned transmission line stub according to claim 6 wherein said first position is defined by a bounded region located adjacent to said transmission line and said second position is defined by a fluid storage reservoir.
8. The variable tuned transmission line stub according to claim 7 wherein said bounded region is bounded by at least one of a solid conductive material and a solid dielectric material.
9. The variable tuned transmission line stub according to claim 1 wherein said fluid control system is responsive to a control signal for selectively moving said fluid dielectric between said first and second position.
10. The variable tuned transmission line stub according to claim 9 wherein said fluid control system selectively controls a volume of said fluid dielectric moved to said first position for controlling said first tuned circuit response.
11. The variable tuned transmission line stub according to claim 1 wherein said fluid control system is responsive to a control signal for selectively moving a second fluid dielectric to said first position.
12. A method for dynamically controlling a tuned circuit response of a transmission line stub, comprising the steps of:
 - producing a first tuned circuit response at an input to a transmission line stub; and
 - responsive to a control signal, producing a second tuned circuit response at said input of said transmission line stub by moving a fluid dielectric from a first position where said fluid dielectric is electrically and magnetically coupled to said transmission line stub, to a second position where said fluid dielectric is electrically

and magnetically decoupled from said transmission line stub, said first tuned circuit response different from said second tuned circuit response.

13. The method according to claim 12 further comprising the step of selecting a permittivity and a permeability of said fluid dielectric to selectively determine said first and second tuned circuit response when said fluid dielectric is moved from said first position to said second position.

14. The method according to claim 12 further comprising the step of selecting said transmission line stub to have an electrical length equal to some integer multiple of about one quarter wavelength at a design operating frequency.

15. The method according to claim 12 further comprising the step of operating a pump to move said fluid dielectric from said first position to said second position.

16. The method according to claim 13 further comprising the step of selecting said first position to be a bounded region located adjacent to said transmission line and selecting said second position to be a fluid storage reservoir spaced apart from said transmission line.